

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

Union Carbide Corp
Union Carbide Corp - St Charles Operations
Taft St. Charles Parish, Louisiana
Agency Interest Number: 2083
Activity Number: PER20080010
Proposed Permit Number: 2350-V4

I. APPLICANT

Company:

Union Carbide Corp - St Charles Operations
PO Box 50
Hahnville, Louisiana 70057-0050

Facility:

Union Carbide Corp
355 Hwy 3142 Gate 28
Taft St. Charles Parish, Louisiana
Approximate UTM coordinates are 746.184 km East and 3,319.222 km North, Zone 15.

II. FACILITY AND CURRENT PERMIT STATUS

Union Carbide Corporation, a subsidiary of the Dow Chemical Company, owns and operates a chemical manufacturing facility in St. Charles Parish near Taft. The St. Charles Operations (SCO) facility is an integrated petrochemical manufacturing complex, converting petroleum-based raw materials into a variety of basic building block, intermediate chemicals and plastics. The products from this facility eventually wind-up in thousands of everyday household, business, and consumer products. The facility as a whole started operation before 1969.

In the Union Carbide low pressure polyethylene process, ethylene and an alpha-olefin comonomer are copolymerized in the presence of a proprietary catalyst to produce polymers having the desired melt indices, densities, and molecular weight distributions. Monomers are fed continuously into a fluidized-bed reactor. Before entering the reactor, the monomers are subjected to impurity removal to protect the catalyst against impurities that could poison it. The catalyst, which can be prepared on site from a specific formulation of materials, is added separately.

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The fluidized-bed in the reactor is made up of granular polyethylene polymer product of the polymerization reactions. Circulated up through the bed, the gas stream passes out of the reactor through an enlarged top section designed to disengage most of the fine particles. It then goes to a recycle compressor and through an external cooler before returning to the reactor.

Dry, free-flowing solid product is removed intermittently from the continuously growing bed through a discharge system in such a way as to keep the volume of the bed approximately constant. The reaction pressure is controlled at low pressures.

Although most of the unreacted monomers are recovered and recycled, some residual hydrocarbons are purged from the granular product so that it can be safely air conveyed. As a final process step, the material form is changed from granular to cylindrical pellet by forming a polymer melt and forcing the melt through an underwater cutter while adding one or more proprietary additives to the product before it is stored or shipped. Pelletized materials are transferred to the loading area for shipment offsite as a commercial product.

Union Carbide Corp - St Charles Operations is a designated Part 70 source. Several Part 70 permits have been issued to the operating units within the [complex]. These include:

Permit No.	Unit or Source	Date Issued
1912-V0	SPU	3/12/2003*
2858-V0	PXC Unit	<i>(Rescinded 4/8/2008)</i>
2422-V1	Olefins I & II	9/30/2004*
2343-V1	Energy Systems	1/31/2008
2421-V0	Amines Plants	11/10/2005
2104-V1	Environmental Operations Plant	2/16/2006
2656-V0	Olefins Distribution/Site Logistics Units	3/13/2006
2214-V0	LP-6	3/27/2006
477-V0	Unit 5 (Amines I)	<i>(Rescinded 7/12/2008)</i>
2876-V1	Unit 9	8/10/2006
476-V1	Oxide I	1/30/2007
513-V2	Acrylics I	6/15/2007
1909-V1	Higher Glycols Plant	6/18/2007
2446-V1	Unit 8 (EXP)	7/3/2007
373-V2	Oxide II	6/13/2008
2254-V0	Acrylics 2	6/19/2006 <i>(Amended 7/20/2007)</i>
2257-V4	TB1 and TB2 Units	10/9/2007
2814-V1	MGE Plant	2/28/2008

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III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application and Emission Inventory Questionnaire were submitted by Union Carbide Corp on June 30, 2008 requesting a Part 70 operating permit. An updated application dated April 6, 2009, and additional information dated May 8, 2009 was also received.

Project

UCC is requesting the following updates.

- UCC has determined that the 40 CFR 64 Compliance Assurance Monitoring (CAM) regulations do not apply to LP-3 emission units. Based on updated interpretation of the CAM rule, CAM applicability was incorrectly assigned to the dust collectors. As such, LP-3 Plant has no emissions units that are subject to CAM regulations. In fact, the LP-3 pollutant specific emission units (PSEUs) are either vented to equipment that do not qualify as a control device under CAM, or vented to a flare subject to continuous monitoring under NSPS Subpart A and therefore exempt from CAM.
- GC XVII Activity, torch used to burn off VOCs off melt pump, was determined to meet the requirements of LAC 33:III.501.B.5.B.3 and has been removed from the GC XVII list.
- GC XVII Activity, Reactors/Start-ups and Shutdowns, is currently being counted in the flare activities (Emission Point 1022) and has been removed from the GC XVII list.
- GC XVII Activity, Filter Inspection/ Change-out, was moved from the insignificant activity list and added to the list of GC XVII activities.
- GC XVII Activity, Transloading of Hopper Cars to Hopper Trucks, was moved from the insignificant activity list and added to the list of GC XVII activities.
- N-Hexane, and Toluene emissions have been removed from Emission Point 1012. Additionally, HCl emissions have been removed as well since the emissions are below the <0.0005 TPY criteria.
- N-Hexane is no longer part of the process and has been removed from the following Emission Points 1014, 1015, 1022, 1036, 1053, 1054, and 1076, at the LP-3 Plant.
- UCC is correcting the PM₁₀ emissions from Emissions Points 1016 and 1017, to 0.02 TPY. The emissions were incorrectly included as 0.03 TPY in the previous application.
- Emission Point 1032: A process stream was added into the calculation that was inadvertently left out of the previous calculation. This change is a reconciliation to reflect existing knowledge of existing plant operations.

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- Emission Points 042/1043, 1055/1056 – Operating hours were increased from 8,000 to 8760 hours/yr. This change is a reconciliation to reflect existing knowledge of existing plant operations. Emission changes will be reflected in the Unloading CAP.
- Zinc is being removed from the PM₁₀ speciation at Emission Points 1052, 1053, 1054, 1057, 1063, 1064, and 1072.
- Emission Point 1067 has been included in the proposed Loading CAP
- Emission Point 1069 has been decommissioned.
- Emission Points 1053/ 1054 currently permitted under GFB Cap will now be included in proposed Loading CAP.
- Loading CAP - This is a proposed emission source which includes emission points 1028, 1029, 1030, 1031, 1054, and 1057.

Proposed Permit

Permit 2350-V4 will be the renewal/modification of Part 70 operating permit 2350-V3 for the LP-3 Polyethylene Unit.

Permitted Air Emissions

Estimated emissions in tons per year are as follows:

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
PM ₁₀	27.55	28.60	1.05
SO ₂	0.16	0.16	-
NO _x	40.66	40.66	-
CO	214.75	214.75	-
VOC *	143.58	135.60	-7.98

* Includes 0.26 VOC Toxic Air Pollutants.

Non-VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
NH ₃	0.01	0.01	-
HCl	<0.01	-	<-0.01
Zn (PM speciation)	0.10	-	-0.10
Total	0.11	0.01	

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IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

Applicability and Exemptions of Selected Subject Items

For the applicability and exemptions of selected subject items at the unit, refer to Section X - Table 1. Applicable Louisiana and Federal Air Quality Requirements, and Section XI - Table 2. Explanation for Exemption Status or Non-Applicability of a Source, of the proposed permit.

Prevention of Significant Deterioration/Nonattainment Review

None

Streamlined Equipment Leak Monitoring Program

The facility is not under a streamlined equipment leak monitoring program.

MACT Requirements

If applicable, the MACT requirements for the different sources are described in the Specific Requirements section of the proposed permit.

Air Quality Analysis

Not required.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

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All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

Permit shield was not requested.

VI. PERIODIC MONITORING

Applicable monitoring for all equipment can be found in the Specific Requirements Section of the permit draft.

VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H₂S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C (“Prevention of Significant Deterioration of Air Quality”) and D (“Nonattainment New Source Review”).

Nitrogen Oxides (NO_x) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of

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regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀ – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO₂) – An oxide of sulfur.

Sulfuric Acid (H₂SO₄) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.